CLAIMS

1. A method of making a magnetic head, comprising:

forming a pole piece of a magnetic head over a substrate;

applying a magnetic field to a pole tip of the pole piece in a direction that is out-of-plane from the substrate and in-plane with a side wall of the pole tip which vertically projects from the substrate.

2. The method of claim 1, wherein the act of applying the magnetic field to the pole tip orients an easy-axis of the pole piece in the direction of the applied magnetic field.

3. The method of claim 1, further comprising:

wherein the act of forming the pole piece comprises electroplating the pole piece over the substrate; and

wherein the act of applying the magnetic field is performed during the act of electroplating the pole piece.

4. The method of claim 1, further comprising:

annealing the pole piece; and

wherein the act of applying the magnetic field is performed during the act of annealing the pole piece.

5. The method of claim 1, wherein the pole tip is formed to have a width that is less than a height of the side wall of the pole tip.

6. The method of claim 1, wherein the pole tip is formed to have a width that is at least two times less than a height of the side wall of the pole tip.

7. The method of claim 1, wherein the direction of the applied magnetic field is at an angle of 90° relative to the substrate.

8. The method of claim 1, wherein the direction of the applied magnetic field is at an angle of between 40-60° relative to the substrate.

9. The method of claim 1, wherein the direction of the applied magnetic field is at an angle of about 50° relative to the substrate.

10. The method of claim 1, further comprising:

wherein the pole piece has an intrinsic crystalline structure that is cubic; and

wherein the direction of the applied magnetic field is at an angle of between 40-60° relative to the substrate.

11. The method of claim 1, further comprising:

wherein the pole piece is made of a material comprising at least one of nickel-iron and cobalt-iron; and

wherein the direction of the applied magnetic field is at an angle of between 40-60° relative to the substrate.

12. A method of making a magnetic write head comprising:

forming a pole piece of a magnetic head with a pole tip which has a width that is less than its height;

applying a magnetic field to the pole tip in a direction that forms an angle $\theta$ relative to a substrate during an electroplating or annealing of the pole piece; and

wherein the angle $\theta$ is out-of-plane from the substrate and in-plane with a side wall of the pole tip which vertically projects from the substrate.

13. The method of claim 12, wherein the act of applying the magnetic field to the pole tip orients an easy-axis of the pole piece at the angle θ.

14. The method of claim 12, wherein the width is at least two times less than the height.

15. The method of claim 12, wherein the angle θ is 90°.

16. The method of claim 12, wherein the angle θ is between 40 – 60°.

17. The method of claim 12, wherein the angle θ is about 50°.

18. The method of claim 12, further comprising:

wherein the pole piece has an intrinsic crystalline structure that is cubic; and

wherein the angle θ is between 40 – 60°.

19. The method of claim 12, further comprising:

wherein the pole piece is made of a material comprising at least one of nickel-iron and cobalt-iron; and

wherein the angle θ is between 40 – 60°.

20. A method of orienting an easy axis of a pole tip for improved writing efficiency, comprising:

electroplating or annealing a pole piece having a pole tip which has a width that is less than its height which is normal a substrate over which it is formed; and

applying a magnetic field to the pole tip in a direction that is out-of-plane from the substrate and in-plane with a side wall of the pole tip which vertically projects from the substrate, to thereby align an easy axis of the pole tip in the direction of the applied magnetic field.

21. The method of claim 20, wherein the direction forms an angle θ of 90° relative to the substrate.

22. The method of claim 20, wherein the direction forms an angle θ between about 40 – 60° relative to the substrate.

23. The method of claim 20, wherein the direction forms an angle θ of about 50° relative to the substrate.

24. The method of claim 20, further comprising:

wherein the pole piece has an intrinsic crystalline structure that is cubic; and

wherein the direction forms an angle θ of between 40 – 60° relative to the substrate.

25. The method of claim 20, further comprising:

wherein the pole piece comprises at least one of NiFe and CoFe; and

wherein the direction forms an angle θ of about 50° relative to the substrate.

26. The method of claim 20, wherein the width is at least two times less than the height of the pole tip.

27. The method of claim 20, wherein the width is four or more times less than the height of the pole tip.